

MARINE SAFETY MANUAL

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CHAPTER 24: SHIPBOARD WORKING CONDITIONS

A. Watchstanding Requirements On U.S. Vessels.

1. Authority Citations.

46 U.S.C. 8104 and 8702, 46 CFR 15.1111 and 46 CFR 15.705.

2. Master's Responsibility.

The master is responsible for ensuring that adequate watches are established. In exercising this responsibility, the master must take into account applicable statutory and regulatory provisions and international conventions. In addition, the circumstances affecting the safety of the ship, its crew, its cargo, its passengers, and operational requirements, especially as they relate to pollution prevention must also be considered. Vessels subjected to STCW are subjected to the standards of watchkeeping as established in Chapter VIII of the STCW Convention.

3. Watchstanding Categories.

A normal watch cycle will include those crewmembers who have functions, duties or responsibilities about vessel operations that are routinely controlled or performed in a scheduled and fixed rotation. Typically, these functions, duties and responsibilities will include the following:

a. Officer Of The Navigational Watch (Master Or Mate).

Except on ships of limited size the provision of qualified deck officers should be such that it is not necessary for the master to keep regular watches. This principle is accepted internationally and is expressed in International Maritime Organization Resolution A.481(XII), "Principles of Safe Manning."

b. Helmsman (Able Seaman Or Specially Trained Ordinary Seaman).

The required minimum manning level must include sufficient personnel who may be assigned to the navigation watches to steer the vessel. The helmsman should be separate from the look-out, except on small ships where the helmsman may safely perform both functions. Unless assigned duty as lookout, the helmsman may be assigned to other duties when not required to be physically present at the helm (e.g., when vessel is on auto pilot). On a merchant vessel of 100 or more gross tons (with limited exceptions under 46 U.S.C. 8702) an individual with a rating of less than able seaman may not be at the wheel "in ports, harbors, and other waters subject to congested vessel traffic, or under conditions of reduced visibility, adverse weather, or other hazardous circumstances."

c. Look-out (Able Seaman Or Specially Trained Ordinary Seaman).

It is expected that a dedicated look-out should normally be assigned to each navigational watch to satisfy Rule 5 of the International Regulations for Preventing Collisions at Sea, 1972 and of the Inland Navigation Rules. Rule 5 requires that "Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision." Look-out duties may be performed by the helmsman or the officer of the navigational watch

under some circumstances, to the extent that Rule 5 will not be violated. (AVIII/2 Part 3 of the STCW Code indicates the requirements for individuals serving as look-outs.)

d. Engineer Officer Of The Watch (Chief Engineer, Designated Duty Engineer, Or Assistant Engineer).

Depending on the level of automation, licensed engineers would either be assigned to direct watchkeeping assignments within the machinery spaces on a rotating basis or, in the most sophisticated vessels, would be assigned monitoring duties without being obligated to maintain a "live watch" in the machinery spaces. Under such circumstances, the automation system performs a significant amount of the watchstanding functions. The required engineers would be assigned overnight duty to respond to alarms that may occur and potentially make intermittent rounds of the machinery spaces. It is noteworthy that IMO resolution A.481 also suggests that the chief engineer would not normally be a watchstander.

e. Qualified Member Of The Engine Department (QMED).

QMEDs (e.g., oiler, watertender, fireman) would be assigned in a manner similar to the licensed engineers. Non-automated vessels would frequently require QMEDs and non-rated members of the engine department assigned to successive watches. However, QMEDs may be assigned to an alternate work schedule (e.g., day-work) when not required for watchstanding duties in the machinery spaces. Where an engineering watch is assigned, IMO resolution A.481(XII) recommends a licensed engineer and unlicensed member of the engine department be assigned, unless the engineering watch officer's status can be monitored from the bridge and assistance immediately dispatched.

f. Radio Operator/Radio Officer.

Radio operators/radio officers are assigned as required by FCC. Most vessels require only one radio officer.

4. Watchkeeping Arrangements.

Current U.S. statutes impose specific watchkeeping requirements on U.S. vessels (46 U.S.C. 8104).

a. Seagoing And Great Lakes Merchant Ships Of More Than 100 Gross Tons.

Except for certain fishing industry vessels and yachts, when a merchant vessel is at sea, "licensed individuals, sailors, coal passers, firemen, oilers, and watertenders" are required to be divided into at least three watches. The 3-watch requirement applies to radio officers only when at least three radio officers are required to be on board the vessel. See 46 U.S.C. 8104(d) for specific exceptions.

b. Certain Vessels On Voyages Of Less Than 600 Nautical Miles.

When towing vessels, offshore supply vessels, and barges are engaged on voyages of less than 600 nautical miles, a 2-watch system is permitted (except for the "coal passers, firemen, oilers, and water tenders").

c. Uninspected Towing Vessels.

Licensed operators of uninspected towing vessels (OUTVs) may be divided into two watches. A seagoing uninspected towing vessel of 200 gross tons or more would be required to be under the direction and control of a licensed master or mate and therefore would be subject to a 3-watch system except for those voyages of less than 600 nautical miles. (See 46 CFR 15.705(d) and 46 USC 8104(h).)

d. Fish Processing Vessels (FPVs).

Licensed individuals and deck crew on FPVs over 5000 gross tons must be divided into at least three watches. At least a 2-watch system is required on FPVs of more than 1600 gross tons and less than 5000 gross tons. (See 46 CFR 15.705(e) and 46 USC 8104(k) and (l)).

e. Fish Tender Vessels In The Aleutian Trade.

The licensed individuals and crewmembers on a fish tender vessel of not more than 500 gross tons engaged in the Aleutian trade must be divided into at least three watches. However, if: (1) the vessel operated in the Aleutian trade before September 8, 1990; or (2) the vessel was purchased to be used in that trade before September 8, 1990, and in fact entered into service in that trade before June 1, 1992, the licensed individuals and crewmembers must be divided into at least two watches. See 46 USC 8104(o).

B. In-Port Watches Of Licensed Engineers.

There have been conflicting decisions and interpretations concerning whether licensed engineers are required to be aboard vessels that are not in a fully operational condition. Under 46 U.S.C. 3302, vessels are not obligated to be manned according to the COI when they are "laid up, dismantled, or out of commission." The only area for which the Coast Guard has published an interpretation in this regard is the Great Lakes, where most vessels are laid up each winter. A vessel in this area undergoes a distinct status cycle:

1. Operating Status.

The vessel is in service.

2. Laying-Up Status.

The vessel has completed service and is being "laid-up" for the winter.

3. Laid-Up Status.

Laying-up of the vessel has been completed. The vessel is inoperable and is essentially laid-up and dismantled and "out of commission" for the winter.

4. Fitting-Out Status.

The lay-up period has ended and the vessel is being prepared for service.

Vessels in laid-up status are exempted by regulations from Coast Guard inspection; therefore, no manning requirements shall be made for them. Vessels in laying-up or fitting-out status should normally be required to have licensed engineers aboard in the early stages of work, and at any time when plant operation warrants such a requirement (for example, while the vessel is moored with boilers in operation). It is recognized that, in many instances, laying-up and fitting-out cannot be classified in a clear-cut manner; however, an adequate determination generally can be made under these criteria.

C. Workhour Limitations.

1. Authority Citations.

46 U.S.C. 8104; 46 CFR 15.1111 and 46 CFR 15.710.

2. "Required" Vs "Permitted" Workhour Limits.

The current statutory provisions limit the number of hours a licensed individual or crewmember may be "required" to work, and in some cases also limit the number of hours the individual may be "permitted" to work. When an individual cannot be "required" to work beyond a certain number of hours, any work in excess of those hours must be voluntary. Such work is not considered to be voluntary if the individual works as a result of direct or indirect coercion. The employee's signature on an employment contract or when working under a labor agreement that clearly obligates him or her to work more than the statutory workhour limit is evidence that such work is performed voluntarily. (It should be noted that the statutory workhour limit e.g., the limit in the number of hours during which work may be required, is not necessarily the point at which "overtime" is calculated under a particular employment contract.)

a. Seaman's Right To Refuse.

Under 46 U.S.C. 8104(d) an individual retains the statutory right to refuse to work beyond the 8-hour statutory workhour limit, except in an emergency or other condition listed in 8104(f). Furthermore, work performed beyond the statutory limit, even when performed voluntarily, may be considered excessive and should not be condoned if the individual's performance will be impaired by fatigue. A continuing pattern of excessive workhours provides good cause for reviewing whether the manning complement as stated on the vessel's COI is sufficient for the safe operation of the vessel.

b. Holiday Work.

A seaman also may not be "required" to perform "unnecessary work" on Sundays or on certain holidays when the vessel is in a safe harbor, though this rule does not prevent the master from assigning work to get the vessel underway on a voyage. See 46 U.S.C. 8104(f).

c. Maximum Permitted Workhours.

Under 46 U.S.C. 8104(c), 8104(h), and 8104(n), licensed individuals and crewmembers are not permitted to work beyond a certain number of hours. The individual still cannot be "required" to work over a certain number of hours each day, but these provisions also place a limit on the number of hours the individual can be allowed to work voluntarily. Except in strictly limited circumstances (such as a drill or emergency), the individual subject to the limitation is not permitted, and may not be required, to perform any work if it would result in working beyond the maximum workhour limitation. Vessels subject to STCW requirements have additional workhour limitations as found in A/VIII/I.

3. Duty Status.

46 U.S.C. 8104(a) requires a minimum "off duty" (e.g., rest) period for officers assigned to take charge of the navigational watch when leaving or immediately after leaving port. The Coast Guard interprets "off duty" within this statute to mean: A continuous period of time that is available to the seaman for rest, during which no work is assigned. A ship's officer who serves as nightmate while the ship is in port is considered to be "on duty" whether or not engaged in work during that time. The hours during which the officer is aboard in such capacity would determine the number of hours worked during that day, and the point at which the officer was relieved would establish the beginning of the off duty period. Similarly, a mariner who has worked aboard ship during the day and stays aboard with the watch section at night, on call in case of fire or an emergency, is considered "on duty" within the meaning of 46 U.S.C. 8104. The statutory prohibition precluding more than 8 hours required work per day is considered to apply to those officers and crew serving in a night relief watch. However, the presumption is that, by accepting such employment, the night watch has voluntarily assumed the additional duty.

4. Exceptions To Workhour Limitations.

Where statutory provisions impose workhour limitations, circumstances are described under which the limits are not binding. The master may require seamen to work when the crew is needed for "(1) maneuvering, shifting the berth of, mooring, or unmooring, the vessel; (2) performing work necessary for the safety of the vessel, or the vessel's passengers, crew, or cargo; (3) saving life on board another vessel in jeopardy; or (4) performing fire, lifeboat, or other drills in port or at sea." On the other hand, when there are statutory limits on the number of hours a seaman may be "permitted" to work, the circumstances under which those limits may be broken are restricted to responding to emergencies or for drills. While there are no strict definitions for what constitutes an emergency for purposes of exceeding a workhour limitation, the Coast Guard considers the best guideline to be the generally understood meaning of an emergency: An unforeseen development which imposes an immediate hazard to the safety of the ship, the crew, the cargo, property, the passengers or the marine environment, requiring urgent action to remove or mitigate the hazard

5. Workhour Limits By Class Of Vessel.

There are several statutes that impose maximum required or permitted workhours within a specific time period (e.g., "day," 24 hour period, etc.). Where the term "day" is used in the context of workhour limits, the Coast Guard continues to accept a long-standing interpretation rendered by the Attorney General that the word "day," as used in the predecessor to 46 U.S.C. 8104, is construed to mean a calendar day of 24-hours beginning at midnight. [Note: opinion dated October 5, 1937 (39 Op. Att'y Gen. 112)]. Where a provision establishes a workhour limit within a consecutive time period, such as a 24-hour consecutive period, there is no specified starting point from which the 24-hour period is measured; except in an emergency or a drill, the prescribed workhour limit may not be exceeded within any given 24 hour consecutive period.

- a. Uninspected Towing Vessels (except a towing vessel on the Great Lakes).
An individual licensed as OUTV under the provisions of 46 U.S.C. 8904 may not work (even voluntarily) for more than 12 hours "in a consecutive 24-hour period" except in an emergency. Unlicensed crewmembers are not subject to this workhour limit. There is no statute addressing workhours for unlicensed seamen within the inland towing industry; however, seaman on seagoing uninspected towing vessels of more than 100 gross tons may not be required to work more than 8 hours per day. If the vessel is on a voyage of less than 600 miles, 8104(h) permits the deck crewmembers to serve in a two watch system. (See chapters 22, 23 and 25 for further discussions.)
- b. Uninspected Passenger Vessels.
There are no specific statutory or regulatory workhour limits which apply to the licensed operators on these vessels, although 46 U.S.C. 8104(b) provides that a licensed individual on a seagoing vessel of not more than 100 gross tons may not be required to work more than 12 hours in a 24-hour period at sea. The Coast Guard as a matter of policy considers 12 hours to be the practical limit for how long an individual can safely exercise direction and control of the vessel. While there may be individuals who can routinely and safely perform work for periods in excess of 12 consecutive hours, the rigors of watchkeeping increase the likelihood of fatigue beyond such period, and such a practice should be discouraged as imprudent. Depending upon the specific circumstances, an owner who compels a licensed operator to work, or a licensed operator who voluntarily works on an uninspected passenger vessel beyond 12 hours may be engaged in negligent operation of the vessel for failing to maintain an adequate watch. (See chapters 22, and 25 for further discussions.)
- c. Tankers.
A licensed individual or seaman may not be permitted to work more than 15 hours in any 24-hour period, or more than 36 hours in any 72-hour period, except in an emergency or a drill. In other words, any individual employed on board in any capacity is limited to an average of 12 hours of work maximum per day, but can never exceed 15 hours of work in a 24-hour period. If an individual works more than 12 hours in one day that individual must work less than 12 hours on other days to ensure he or she does not work more than 36 hours in any three day (72-hour) period. The workhour limit applies to the master as well as other individuals employed on board tankers. The master is recognized to have a unique status on board the vessel. The master's duties, and the overall responsibility associated with overseeing the safety of the ship and its crew, are continuous. However, the master, like any member of the crew, can suffer from fatigue. Although it may be difficult to fully predict or anticipate the master's workload, the master must regulate his or her own duties and workhours to mitigate the possibility of fatigue, particularly if the master is included in a watch section as an officer of the navigational watch. 46 U.S.C. 8104(n) exempts the master as it does the other licensed individuals and seaman, when workhours must be exceeded in the case of an emergency or drill.

d. Seagoing And Great Lakes Merchant Ships Of More Than 100 Gross Tons.

A licensed individual or unlicensed seaman in the deck or engine department on these vessels may not be required to work more than 8 hours in one day, except when needed for vessel maneuvers, "necessary" (e.g., essential, safety related) work, lifesaving, or drills. See 46 U.S.C. 8104(d), (e) and (f). This does not preclude seamen from voluntarily working beyond 8 hours and possibly becoming fatigued. OCMI should consider all relevant information as described in 20.C in establishing the required manning level. While there is no definitive basis for a maximum workhour limit for vessel crewmembers, the OCMI has the discretion to impose manning levels based on a specified reasonable workhour limit taking into account fatigue and other human factors. A twelve hour work day, applied in a manner similar to the workhour limit for tankers, is considered a reasonable workhour limit for other classes of vessels. (See section 20.H of this volume for additional discussion.)

e. Uninspected Fishing Industry Vessels.

Although there are no statutory workhour limit provisions regarding these vessels, there are requirements concerning watchkeeping arrangements that apply to the licensed individuals and unlicensed deck crew on the various uninspected fishing industry vessels. (See section A.4 of this chapter and Chapter 26.)

D. Crossover Prohibition.

1. Authority Citation.

46 U.S.C. 8104(e).

2. Deck And Engine Departments.

On merchant vessels of more than 100 gross tons (with certain exceptions as stated in 46 U.S.C. 8104(d), and towing vessels operating on the Great Lakes and connecting waters, a seaman may not be engaged to work alternately in the deck and engine departments; nor may a seaman be required to work in the engine department if he or she has been engaged to work in the deck department, and vice versa. However, this rule does not prevent the seaman from being required to work in a department for which he or she was not engaged when needed for vessel maneuvers, "necessary" (e.g., essential, safety related) work, lifesaving, or drills. See 46 U.S.C. 8104(e) and (f).

- a. When permitted by the Certificate of Inspection, some of the individuals in a vessel's required crew complement may be engaged as maintenance-persons and assigned as deck maintenance-persons or engine maintenance-persons in those respective departments. These individuals perform maintenance duties within the deck or engine department boundaries and are subject to the crossover prohibition of 46 U.S.C. 8104(e).
- b. The required maintenance-persons should hold appropriate qualified ratings (e.g., Able Seaman, QMED, etc.) so they may be used to augment navigational or engine room watches should the need arise. During periods in which these maintenance-persons are used to augment watches, they become part of the watch and are subject to the appropriate watch rotation requirements.

3. Maintenance Department.

With the increased use of automated systems, labor saving devices, and scheduled shoreside maintenance programs, some vessel operators have used shipboard management innovations to provide greater flexibility in the use of available crewmembers. Assignment of maintenance-persons to a Maintenance Department allows these crewmembers to be used to perform work throughout the vessel on a regular schedule. However, with suitable qualifications, they can also be available to augment the watch as watchstanders as circumstances may warrant (such as periods of restricted visibility, or a failure in an automated system). When authorizing implementation of a Maintenance Department on a particular vessel, the OCMI should condition final approval on review of the vessel's operational requirements, and crew workload, following a trial period of up to a year. (See chapters 20 and 23 for maintenance department discussion and sample manning scales for vessels employing maintenance-persons.)

E. International Standards Relating To Working Conditions.

1. International Convention On Standards Of Training, Certification And Watchstanding For Seafarers (STCW) 1978, as amended in 1995.

This convention sets forth professional qualifications for merchant seamen. This convention also describes basic principles to be observed in keeping a navigational watch and an engineering watch. According to STCW regulation II/1 and III/1, the watch system shall be such that the efficiency of the watch is "not impaired by fatigue"; and duties are to be so organized that the watches are "sufficiently rested and otherwise fit for duty."

While STCW is not a manning convention, it clearly impacts manning decisions in terms of requiring certain skills to be possessed by crewmembers performing certain functions. It provides for mariners to be "fit" even though the convention does not define the terms "fatigue" and "fit for duty." The International Maritime Organization is in the process of developing guidance on identifying the factors of ship operations that may contribute to fatigue and methods for mitigating crew fatigue.

The STCW Convention also lists a number of criteria to be taken into account in deciding the composition of the watch on the bridge, and provides guidance on conditions under which the duties of the look-out can be performed by the helmsman or by the officer of the navigational watch. Additional guidance on watchstanding can be found in IMO Resolution A.481, "Principles of Safe Manning."

2. The International Labor Organization (ILO) Convention Concerning Minimum Standards In Merchant Ships (ILO Convention 147).

Among other matters, this Convention addresses shipboard conditions of employment and shipboard living arrangements. Each country that is a party to the Convention must have laws or regulations laying down, for ships registered in its territory, inter alia, "safety standards, including standards of competency, hours of work and manning, so as to ensure the safety of life on board ship." This convention came into force for the United States on June 15, 1988. (See COMDTINST 16711.12 for enforcement guidance concerning this convention.)

3. Human Factors Considerations.

Recognizing that the majority of maritime casualties involve human error, the International Maritime Organization is undertaking a review of its instruments, including conventions, codes and resolutions, to consider whether human factor implications have adequately been taken into account in the development of guidelines, standards and recommendations. The United States is playing a major role in this effort to integrate human factors considerations into the IMO decision-making process. The objective is to ensure that human performance limitations, and the role of the human being within a defined system, are given fundamental consideration in the development of new international standards. Given the rapidity with which new information is becoming available on human factors applications in the maritime environment, it is not possible to provide detailed guidance in this manual. Information which may be particularly useful to the industry will be circulated by means of navigation and inspection circulars.

